DOCUMENT RESUME

ED 046 466 LI 002 502

AUTHOR	Shank, Russell
TITLE	Science and Engineering Library and Information Service Development in Support of Research and Development in Indonesia; Report to the Chairman of the Indonesian Institute of Sciences (LIPI).
SPONS AGENCY	Indonesian Inst. of Sciences, Djakarta (Indonesia).
PUB DATE	19 Nov 70
NOTE	23p.
AVAILABLE FROM	Smithsonian Institution Libraries, Washington, D.C. 20560
EDRS PRICE	EDRS Price MF-$0.65 HC Not Available from EDRS.
DESCRIPTORS	Foreign Countries, *Information Needs, *Information Services, *Library Materials, *Library Services, Research Libraries, *Sciences
IDENTIFIERS	Indonesia, *Scientific and Technical Information, STINFO

ABSTRACT

Access to scientific and technical information is essential to the conduct of high quality research and development work. Indonesia's scientists and engineers in Government research institutes are generally not being well-served by their own libraries. The most serious deficiencies are: (1) inadequately trained library staffs, (2) lack of availability of current journals, (3) lack of current bibliographical and indexing services, (4) shortage of recent monographs and reference books, (5) poor or non-existent information services, (6) limited interlibrary cooperation, (7) underutilization of existing resources, (8) limited resources to aid in the selection of current titles for improvement of libraries, (9) cataloging arrearages and (10) lack of understanding by many administrators of the true nature and value of library and information services. The principal goals of the research institutes in Indonesia for library and information service should be: (1) bring the most important new discoveries to the scientist's attention; (2) make engineers and technicians aware of new techniques, processes and products; (3) provide better sources of reference data and information and (4) decrease the time it takes to deliver a journal article, book, report or document to a library user. [Not available in hard copy due to marginal legibility of original document.] (NH)

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL BY MICROFICHE ONLY HAS BEEN GRANTED BY

Russell Shank

TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

PIO/T 497-11-690-186-00217

ED 046466

REPORT TO THE CHAIRMAN OF THE INDONESIAN INSTITUTE OF SCIENCE (LIPI)

SCIENCE AND ENGINEERING LIBRARY AND INFORMATION SERVICE DEVELOPMENT IN SUPPORT OF RESEARCH AND DEVELOPMENT IN INDONESIA

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

Russell Shank
Director of Libraries
Smithsonian Institution
Washington, D.C.
Consultant to the American
Library Association

LI 002502

November 19, 1970

Professor Sarwono Prawirohardjo
Chairman, Indonesian Institute of Sciences
Djakarta

Sir:

It is my pleasure to submit to you my report with recommendations for the improvement of library service in science and technology in Government research institutes in Indonesia. These recommendations are made after an examination of the library and information services in over 50 agencies in Djakarta, Bogor, Bandung, Jogjakarta, Solo, Surabaya, Denpasar and Medan.

The recommendations are intended to apply to more than just the LIPI Institute libraries. All science research libraries in Government are subjected to the same influences, have similar successes and suffer similar disabilities, although to varying degrees. The work of the various agencies is in many places closely related. Because of the high cost of library and information services, cooperation among agencies will be required for success in improving these services.

My recommendations call for an improvement in the educational facilities and status for librarians, the further strengthening of several major facilities, an increase in materials for current awareness in all libraries, national planning to improve the amount and the quality of literature resources in Government research libraries, and expansion of the concept of service in addition to the building and maintenance of collections.

Some of the recommendations are amenable to adoption soon, some will require considerable long-range planning, both with regard to structure and financing. I trust that the immediate difficult financial situation for libraries will not deter the various agencies concerned from beginning to make the policy, as well as the economic, commitments required for long-range improvements.

I must take this opportunity to thank the many Indonesian Government officials, institute directors, their subordinates, and librarians for their time and courtesy in making my visits as meaningful as possible. I am particularly indebted to the director and the staff of PDIN for their splendid planning of my itinerary, their patience in answering my many questions about Indonesia, and particularly their personal guidance of my travels and visits. Their devotion to the cause of good information service is obvious, not only in the fine work of PDIN, but also in their attention to my work.

Respectfully submitted,

Russell Shank

Russell Shank

cc: Director, USAID
Director, USIS

INTRODUCTION

Scientific and technical research and development in many research institutes throughout Indonesia is being done almost entirely without access to current information and the results of work done elsewhere in the world. Only a few science and engineering libraries receive any current journals. Most libraries have some new books, but these are still a relatively small part of the current output of major publishers in the world. Almost no new proceedings of the important congresses and conferences held in science throughout the world in the past decade are available in Indonesian libraries, and the holdings of up-to-date bibliographies and indexing services are practically nil. Many of the research institutes are engaged in upgrading programs for technicians, but almost none of the institutes have the kind of literature that can be readily used and understood by these people in their training status.

The scarce library resources of the nation are too widely dispersed among many research institutes, each of which seems to face its shortages alone with a view towards becoming completely self-sufficient. This is impossible, even for a highly industrialized and rich nation. National planning and cooperation are essential. Existing resources could be more effectively brought to bear on scientific and technical information problems in Indonesia if more of the collections were in the hands of trained librarians and information service specialists. This lack of a cadre of trained librarians in Indonesia is a serious deterrent to good service, and above all else, ways must be found to increase their number and to improve their economic and social status.

Important among my recommendations are these. The Indonesian Government must make it a matter of public record that the provision of good library and information services, in order to support quality scientific and technical research and development, is a matter of national policy. Indonesia has several outstanding libraries and information service agencies in science (particularly PDIN and Bibliotheca Bogoriensis), and my recommendations propose that the first steps towards the improvement of information handling be based on these agencies, giving them national responsibility for service and for planning the development and utilization of collections throughout the nation. Each research institute, furthermore, must take steps to provide at least a minimum standard level of information service to its staff, and to move towards the expansion of its programs to diffuse knowledge in its field to the nation. Research institute managers must take the responsibility for seeking funding in their routine budgets for these activities.

SUMMARY AND MAJOR RECOMMENDATIONS

THE PROBLEM AND GOALS FOR ITS SOLUTION

Access to scientific and technical information and data as recorded in various formats is essential to the conduct of high quality research and development work. Proper utilization of existing information will speed up research, and reduce costly errors and duplications of effort. The information needs of engineers and scientists and engineers may be grouped into three categories: exhaustive need, requiring as much information as can be found on a subject, usually at the beginning of a research project; daily reference needs, requiring facts, figures and other pieces of data and information to answer the many questions and problems that arise each day; and current awareness needs, requiring information about new developments and findings in a subject.

Indonesia's scientists and engineers in Government research institutes are generally not being well-served in any of these needs by their own libraries , although there are some notable exceptions. The most serious deficiencies among the libraries in science and technology in the Government which should and can be soon faced are:

(a) Inadequately trained library staffs;
(b) Almost complete lack of availability of current journals;
(c) Almost complete lack of current bibliographical and indexing services;
(d) Shortage of recent monographs and reference books;
(e) Generally poor or non-existent information services;
(f) Limited interlibrary cooperation;
(g) Underutilization of existing resources;
(h) Limited resources to aid in the selection of current titles for improvement of libraries;
(i) Cataloging arrearages;
(j) Lack of understanding on the part of many administrators of the true nature and value of library and information services.

The elimination of these deficiencies will obviously be an expensive and a difficult task. The goals for improvement must be clearly understood. Full attainment is not possible all at once, or in a short period of time. The recommendations in this report suggest first steps that will provide basic improvements in the environment for library and information services, and <u>in general</u> indicate the best route to full-scale information service capability. Each recommendation has many implications for the selection and the development of resources and techniques for its implementation. These are generally known to trained librarians, and are not specified in detail in this report. Indonesia has a number of excellent librarians and information specialists on whom they can rely for these details.

Given the current state of research in the physical and engineering sciences in the research institutes in Indonesia, the principal goals for library and information service should be:

(a) In the pure or basic science sector: to bring the most important new discoveries and new methods of research in each scientist's field to his attention for his continued personal development and to keep his work at the forefront of his science;

(b) In the applied science and industrial sector: to increase engineers' and technicians' awareness of new techniques, processes, products and practices appropriate to their work;

(c) In both sectors: to provide better sources of reference data and information to solve the many daily problems that arise in the course of experimentation and development work;

(d) In both sectors: to decrease the time it takes to deliver a journal article, book, report or document to a library user once he has specified his need for it.

MAJOR RECOMMENDATIONS

1. Top priority should be given by the Indonesian Government to the improvement of education for special librarians and the status of these librarians in Indonesia.

Special librarians in Indonesia should give assistance to the University of Indonesia in curriculum development for special librarianship. Theories and techniques applicable to special librarianship should be introduced into every applicable course in the curriculum. Special effort should be made to recruit good science graduates to enter the field of librarianship and information science. The scientific and technical community of Indonesia should be encouraged to give high status to information science and service work. As quickly as they become available, library school graduates should be recruited to take over the top librarians' jobs in the research institutes. The top librarian in each institute should be included as a member of the decision-making structure of the institute, particularly with regard to budget and research policy deliberations. A librarian entering Government service from a professional library job in industry should get full credit for his years' service in industry.

2. The provision of library and information services in full support of scientific and technical research and development should be adopted as a national public policy by the Government of Indonesia.

The urgency of the need, and the competition for funds is so great that improvements in the information resources in science for Government research agencies in Indonesia must be mandated by top Government agencies. It should be national policy that the goal for library development is to have one copy of every relevant scholarly publication in science and technology, regardless of source, available somewhere in a library in Indonesia. It should be national policy that every Government agency involved in science and technology should be responsible for the development and operation of an information handling and service system relevant to its mission. It should be national policy that there be a national plan for library and information service development in science and technology in Indonesia. It is recommended that LIPI take the lead in fostering and coordinating planning development. All ministries, LIPI and other Government agencies that are likely to be concerned with national library development, should work together, sharing resources and responsibilities for the fulfillment of these public policies. National planning in science and technology for special libraries should be coordinated with any plan that develops to build the resources of university libraries.

3. To achieve the goal of having adequate literature resources available in Indonesia in the shortest possible time with the least cost, several existing large and well-managed library and information agencies should be designated as national library centers in science and technology, in agriculture and in medicine. The collections of these libraries should be rapidly enlarged to cover fully the interests of scientific research and development in Indonesia in order that they might serve the needs of the many small and weak Government research libraries.

To build on strength is far sounder than to try to make many small libraries fully self-sustaining. For science and technology the LIPI Libraries (Bandung and at PDIN Djakarta) and for agriculture the Bibliotheca Bogoriensis (Bogor) should be designated national library agencies in science and technology and in agriculture respectively. PDIN and Bibliotheca Bogoriensis will both require more space: their new buildings must be finished without further delay. No library of medicine on my tour was capable of carrying this responsibility. Special developmental budgets should be provided to start these libraries off as national library agencies. Their routine budgets should be increased especially to keep up to date for this task. Funds should be provided by each ministry concerned with science. Other research institute libraries should not be ignored, but additions to their collections now will serve only limited needs. (See Recommendation 5.) As soon as it is

economically possible, other special libraries should be developed to assume part of the burden to serve the nation in their subject areas. (The Regional Housing Center in Bandung may soon be in a position to do this.) Resources of these libraries and the national library agencies should be shared through improved interlibrary loan, photocopying and in-house reading opportunities. Travel funds should be provided for scientists and engineers to go to these centers for extended literature use if required.

4. The reference and information service staffs of PDIN and Bibliotheca Bogoriensis should be enlarged immediately, particularly to offer expanded services aimed at improving the current-awareness and the immediate reference needs of the staffs of the research institutes and centers with weak libraries.

Talent for this function is scarce, and had best be attached to the strong information and library agencies at first. These information officers should keep themselves informed about the research and development interests in science and technology in Indonesia through the means of an inventory of research and development projects. One of their chief functions then should be to route citations or copies of pertinent literature to libraries or individuals as the material is received by these national centers.

5. Each research institute should have as its immediate goal for library service and facilities the satisfaction of the researchers' need for current awareness of at least the major developments at the heart of his subject field, and sufficient reference materials to provide him with references to other pertinent current literature, and with the answers to questions of details and facts that may arise in the daily pursuit of his tasks.

Every research institute should subscribe immediately to the most important journals in which research and development work most highly relevant to the work of the institute is usually reported, and to those journals which deal especially with science and engineering in tropical regions. No attempt should be made at this time to obtain issues of these journals that are more than five years old. When funds are scarce, no old issues should be sought under any circumstances: photocopies of pertinent articles should be obtained from PDIN. Each institute should have on hand current issues of one or two indexing services that cover the most pertinent journal literature in its field. The stock of reference books in each institute library must be brought up to date.

6. A national plan for library development in all aspects of science and technology should be established to attain the goal of having one copy of each relevant research publication available in a library somewhere in Indonesia.

The national library centers should direct this effort. Assignments of responsibility for developing special collections in various subject areas should be given to research institute libraries, based on their existing subject interests and their ability to staff their libraries with trained librarians. Funds, in addition to the various libraries' routine budgets, should be made available to finance the national plan. Orders for books for designated libraries should be centralized in the national library centers, at least until the acquisitions and cataloging functions can be handled in the research institute libraries by trained librarians. A union catalog will be required at each national center to reduce duplication and to provide a route of access to the nation's collections. A national interlibrary loan code should be negotiated among the libraries.

7. Each national library center, and others whose collections become strong enough to support at least the current-awareness needs of their clientele should be staffed with subject specialists to offer information services to scientists and engineers.

Among other things these specialists should take the initiative to route potentially useful citations and copies of articles and documents to scientists and engineers who they know may need them. These specialists will have to be trained in science or engineering or have demonstrated an ability to understand the work of scientists and engineers in research and development. Obviously they will have to be located in libraries that receive important literature currently. The national library centers must have such people on their staffs.

8. Education specialists in Indonesia should be called upon to recommend the kind and amount of library facilities and service that should be available to support upgrading courses in those institutes that offer them.

Learning processes in technology require special literature resources. Where this function is important to the work of an institute, the library collection should be specially augmented. The cost of library services for support of upgrading work should not be allowed to dilute the funds made available for the support of research and development work. All these activities are important and should be funded accordingly.

9. Every effort must be made to provide more literature in science and technology in Bahasa Indonesia.

Pertinent information in science and technology appears in many languages, but particularly English, German, French, Russian, Italian, Japanese, Polish, Swedish and Dutch. Translators should be available at one or more of the large national library centers to provide synopses of articles and full-text translations, both on a regular basis in anticipation of need and on demand. Selected text and reference books, particularly pertinent to the highest priority work in Indonesia, should be translated into Bahasa Indonesia and distributed either through the local book trade or as Government documents.

10. Indonesia should study the feasibility of tying into the many national information networks under development in several foreign countries.

Both the National Agricultural Library and the National Library of Medicine in the United States are forming such networks, and they appear to have international potential. PDIN should be assigned the responsibility of determining the utility of such networks and the resources required to tap them. Most likely, one center in Indonesia, such as PDIN, should be the central Indonesian terminal contact with these networks.

OTHER RECOMMENDATIONS

The preceding recommendations, in the main, affect the structure of library and information service in Indonesia on a national scale, although some are directed to research centers at the local level. None of them go into detail of implementation. Following are some specific projects that can be effected without altering any national policies, major organizational relationships, or ways of operating in libraries.

(a) When the union list of serials has been finished by PDIN, a complete list of missing issues in libraries throughout Indonesia should be offered to one dealer for a limited time in an attempt to fill in back sets. After a limited time, the issues that have not been found should be microfilmed. PDIN should organize and manage the program of filling in missing issues; each small library should not go through the routines of searching the back-issues market. PDIN should hold the microfilm editions and supply full-size copies of articles from them on demand.

(b) PDIN should officially be given the responsibility of serving the research institutes in all branches of LIPI and its staff and budget should be enlarged accordingly.

(c) The LIPI Libraries at Bandung must be staffed, at least with a librarian, a technical assistant, and an information officer as soon as possible. They should operate as a division of PDIN. Without a staff these libraries are a vastly underutilized resource in an important regional center for technology.

(d) The size of the information service staff at PDIN should be increased (or the size of the staff performing other functions should be increased) so that those now on the staff with appropriate qualifications can concentrate on service to others).

(e) Funds should be provided for the acquisition of microfilm copies of U.S. Atomic Energy Commission reports by the Indonesian depository library (GAMA National Atomic Agency, Gadjah Mada University). It is estimated that $300 a year will be required.

(f) PDIN should work with research institute libraries to locate or to generate subject heading lists for their collections.

(g) Instructions should be disseminated to all research institute directors and their librarians on the fastest way to order new books. Some directors are ordering books directly from publishers: others do not seem to know that this can be done.

(h) The new PDIN building should be finished without further delay. The present building is being used beyond its capacity already.

(i) An experienced graphic arts manager should be added to the staff of PDIN. The equipment present and being added to PDIN for reproduction is quite sophisticated and may well be damaged or not properly utilized by inexperienced people without good supervision.

COMMENTARY

It is a tenet among scientists and engineers that research is not done until it is reported in the accepted media of the various sciences. This allows science to advance by providing checks on the reliability and validity of research work, and by providing input to new or continuing research and development activities. Just as important, this published record, if properly organized for retrieval and inspection, reduces the chance that expensive and difficult research will be duplicated. Literature and information resources, then, are a crucial element in successful research and development enterprises.

Throughout the Indonesian Government, most scientists and engineers are working without access to the current results of research and development work done elsewhere in the world. Although library resources of all kinds are in short supply in Indonesia, the most critical shortage is in current journals. It is in this medium that the advances of science are first reported. Most Government research institutes have no current subscriptions to journals, and those that do, receive a pitifully small representation of the relevant titles. And most of the libraries of the institutes do not have even the indexing services that cover the journal literature, hence do not know what to ask for to keep up to date.

This means that Indonesian science and engineering is not using an essential and available resource in which much that is directly and immediately applicable to problems in Indonesia is readily available. It means that Indonesian science and engineering is not effectively and efficiently using the resources (talent, equipment, raw materials, etc.) that are available. Hopefully, Indonesia can find the financial resources to make the investment in the means for access to already recorded knowledge.

OFFICIAL TOP LEVEL SUPPORT IS REQUIRED

Attempts to improve library and information services to science and technology will be only partially successful unless there is strong and evident support from top Government and management leaders. The job to be done to improve these important elements of Indonesian science and technology is too large, and the competition for funds for high priority activities is too great to leave the task strictly to the good will of research managers.

Support from the top should come in many ways and forms. Appropriate Government officials should make it a matter of national policy, publicly proclaimed, that information resources and services in support

of scientific and technical research are essential to success and will be fully given. Each branch of the Indonesian Government responsible for any part of scientific research and development must accept the responsibility to maintain good information systems, both to support the work of their staffs, and to keep other agencies' staffs and the public in general, informed of the results of their efforts. These information systems should be capable of handling appropriate data and information in pertinent subject fields from abroad.

Appropriate Government officials, hopefully no lower than the directorate general level, should require those who are responsible for scientific and technical research and development in their heirarchies to plan and put price tags on good information handling activities in their enterprises that will achieve these goals. A plan of action to implement these activities should be included in the budget deliberations of each agency.

Whatever is done, it is imperative that every research institute include funds in its routine budget for library and information services. This is too important a resource for good research and development to allow it to be subject entirely to the vagaries of friends, foreign aid and the ingenuity of untrained librarians.

EDUCATION FOR LIBRARIANSHIP MUST BE IMPROVED

Many of the comments and recommendations of the recent report by Dr. Williamson on university library development in Indonesia are applicable to librarianship in general in Indonesia, and if carried out would improve conditions in scientific and technical libraries.

Dr. Williamson's first and highest priority recommendation must be repeated here, for it applies first and foremost to the solution of problems of special libraries in science and engineering. Dr. Williamson says:

> "My first priority recommendation is that the library school be given special attention and very substantial additional support to equip it to educate the highly qualified librarians needed to administer university libraries and to lead the growth of librarianship in Indonesia. Until this source of qualified librarians is strengthened, no other help can be effective in improving the libraries of Indonesia."

During my visits to libraries throughout Indonesia it was clearly evident that libraries run by trained librarians were reasonably well organized, followed modern practices of cataloging and indexing and of management of resources. Conversely, where no trained librarian was in charge, the so-called library was usually nothing more than an accumulation of books and documents, some not even applicable to the work of the institutes, was offering no services to readers, and was

certainly not an attractive and useful source of information. This was obviously due to the lack of knowledge on the part of the person in charge of what libraries should and can do, and how to do it.

Dr. Williamson recommends: (1) the improvement and expansion of the faculty of the Library School of the University of Indonesia; (2) the careful screening of student admissions; (3) the provision of books and other equipment for the Library School; (4) assistance in planning and curriculum development; and (5) improvements in space for the Library School.

At least one of the new faculty members recommended by Dr. Williamson should be a person with training and experience in the management of special libraries and information services. Courses in cataloging and classification should be extended to include studies of the theories of classification and the nature of special classifications for detailed information work. Good students with degrees in various sciences should be actively recruited to take library training. They will find that their knowledge of the sciences is much appreciated and put to good use in information retrieval work on behalf of their colleagues in the laboratories. The special librarians of Indonesia should offer assistance in curriculum planning at the Library School, through their professional association. They should endeavor to have the interests of special libraries introduced wherever applicable in general courses of the Library School, and should encourage the expansion of the number of courses relating to special library and information work.

All Indonesian agencies involved in library and information service should examine carefully the utility of sending people abroad for their basic professional library training. I am not at all certain that it is worth the time and money to send a person abroad to learn the most advanced theories and practices and then put him to work in Indonesia under conditions that do not allow him to apply any of what he has learned, and that do not foster his own continued education in his profession.

A better pattern would be to improve library education in Indonesia to a point where the good students can serve well with their local education. The best graduates should visit and work for brief periods in libraries and information and documentation centers in advanced industrial and agricultural countries after they have gained some experience in Indonesian libraries for a few years. Then they will be better able to do useful work in foreign libraries, and to evaluate their work abroad as it progresses in terms of what they know of Indonesia's library needs and resources. Indeed, no one should be sent abroad for basic library education without his having had some experience at the subprofessional level in an Indonesian library.

Until this improvement in Indonesian library education takes place, there will still be a need to train some people abroad. But once they finish, they should have, or be placed in, jobs in Indonesia in agencies that offer good financial support to library and information services.

The special training course offered by PDIN is good, and should be continued for a few more years, at least. It should be considered only a temporary expedient, however, pending the improvement of the Library School. Everyone must recognize that the PDIN course is not designed to train fully-qualified professional librarians but merely to improve the performance of the many untrained people assigned to libraries in a few basic elements of librarianship.

THE STATUS OF LIBRARIANS MUST BE RAISED

The lack of educational opportunities is not the only deterrent to increasing the number of librarians in Indonesia. The social and economic status of librarians and information specialists must be improved. Salaries for these people, particularly if they have been professionally trained in librarianship or science, and if they have a master's degree, should be raised significantly. Starting salaries for science and engineering librarians should be raised. I am confident that the work of well-trained, well-paid librarians will be so obviously beneficial to scientists and engineers that not only will their status be improved, but also more good people, hopefully with science backgrounds, will enter the information science professions. The assignment of people without full library training to perform professional tasks in libraries should be discouraged. Such persons can and should be used, after limited training, in technical support tasks. Only graduates of library schools or those who are capable through recognized good experience and on-the-job training should be called librarians. Another title, such as custodian, should be given to the many people now in charge of libraries who are not trained for the profession.

LIBRARIES MUST CONTAIN CURRENT INFORMATION AND DATA

Most of the research institute libraries, even those with relatively large collections, are woefully inadequate in several vital respects. Few libraries in the nation receive current journals. Most of their subscriptions, which were not too many to begin with, ceased sometime between 1959 and 1965. Except for the input of books from foreign aid sources, their collections of research monographs is likewise somewhat dated. This is an impossible situation in science and technology whose advances have been so rapid that information is out of date within five to ten years.

Furthermore, few libraries have current indexing and abstracting services, or any announcements of new books that would allow their librarians and users to know even the titles of good books in their fields which they could order (if they had the funds) or borrow from a larger library.

Because they cannot afford to have personal libraries, many scientists and engineers in Government service in Indonesia work in a complete vacuum with regard to knowledge of advances in their fields.

Much of the material on the shelves of each library is not at all related to the work of the research institutes. These are usually gift materials, which the institutes are reluctant to refuse, and which their library staffs usually diligently catalog.

The USAID and USIS books are much in evidence in all of the libraries to which they were sent. The USAID books seem appropriate to the subject fields of the centers. They are, in the main, cataloged and classified and integrated into the collections. While many of the USIS books are not related to the sciences, they may be the only source of general reading for many of the workers in the institutes. There are probably too many copies of most of the books supplied by USIS in each institute. Unfortunately, for various reasons the institutes are reluctant to discard some of these books. They should be encouraged to do so however, and a mechanism for transfer of the books to more appropriate collections, if any, should be organized by some national agency.

The decision to limit the input of USAID books this year to a relatively few libraries, and only if those libraries were well organized and managed and did not have access to good budgets, will improve the contribution of this program immeasurably. The probability that these books will now be more used in these better libraries is higher than if they were located in libraries that didn't know how to handle them properly. This far offsets the result of the loss of buying power for the many libraries that no longer have access to USAID funds. I would urge a further concentration of effort, however, if the USAID program continues, by applying it only to the best libraries in Indonesia, regardless of their access to other funds. No library in Indonesia is very well funded. Those that are relatively better off are so well run and attractive to users that the demands made upon them are yet beyond the capacity of their budgets. Special assistance should be offered to those libraries that are well organized and managed, and that are used or made available to a wide audience beyond the agencies they are organized primarily to serve.

In short, the library collections in most research institute libraries in Indonesia need large-scale refurbishing. The costs of such an effort would be monumental. Nevertheless, something must be done to make these libraries useful in the cause of modern science and engineering in Indonesia. As first step, each institute manager must make up his mind to improve the situation. In whatever ways possible, scientists and engineers and their directors should encourage good people to enter the profession of librarianship. A general increase in the number of trained librarians in Indonesia will make it easier to recruit librarians with the required talent to creat and manage an effective library efficiently.

Each library must have a collection-development policy statement to guide the selection of books to be added to the library. Among other things, such a statement could be cited to a potential donor of books which must be declined if they do not meet the needs of the users.

It is almost unbelievable that a research agency in science and engineering could operate without devoting a reasonable amount of funds in its ordinary budget to the supply of current literature, but this is indeed happening throughout Indonesia. Most of the research institute libraries are now so far behind in collection development that they must examine alternatives to the acquisition of large amounts of library material. It would seem to me most reasonable to proceed in the following fashion:

(a) Begin in each research institute library to subscribe to a small, highly-selective list of current research and trade journals at the core of each subject field covered. No attempt should be made to acquire long runs of retrospective issues. The number of such journals may range from seven to forty, depending upon the subject field. Several lists of the most cited journals are available as selection guides. Some trade journals in engineering fields, particularly those heavy with advertising, are available free to individual engineers, depending upon their importance as potential customers for products advertised in these journals. Application should be made directly to the publishers.

(b) Each institute should subscribe to one or two current indexing services. These are likely to be expensive, and subscriptions to them may have to be deferred. Hopefully, several large national library agencies can be staffed with information officers who will be able to scan current literature in their centers, referring important articles to scientists and engineers throughout the nation. They will, in essence, serve as referral agents in lieu of indexes.

(c) A small supply of handbooks, manuals, tables of data and similar reference works must be purchased also.

(d) As many highly pertinent monographs and treatises as can be afforded should be added to the collections each year. To the maximum possible extent, titles that may be only partially relevant to the work of a center should be borrowed on interlibrary loan, rather than purchased.

NATIONAL SCIENCE, AGRICULTURE AND MEDICAL LIBRARY AGENCIES SHOULD BE ESTABLISHED

Since it is not likely to be possible soon to build even moderately sizeable libraries in the many institutes in Indonesia, and since it is important for the scientists and engineers who work in them to have access to literature from some reasonably available source, it is recommended that several already large and potentially well-managed libraries' collections be quickly enlarged so that these libraries can take on the responsibility of providing library service to the nation. The LIPI Institute libraries in Bandung and at PDIN in Djakarta are recommended for this task in the physical sciences and engineering. The LIPI Institutes are locaed, along with a number of other highly important research agencies, and the Bandung Institute of Technology, in a concentrated geographical area. Bandung is also a major industrial center, hence this is a logical place to have a national library center in technology. The LIPI Institute libraries will have to be consolidated into one unit, which is apparently in the offing. That library will also have to be staffed with trained librarians and library technicians. It will be too important a library to leave unstaffed in any event. It should be organized, however, as a division of PDIN in Djakarta in order to reduce the demand for duplicative staff, and to facilitate cooperative routines, such as centralized cataloging and interlibrary loan.

The Bibiotheca Bogoriensis in Bogor already serves as a library center for research institutes in several cities. It would be only logical to designate that library as a national library center in agriculture and the biological sciences. Unfortunately my visits to medical libraries were limited, hence I cannot recommend a national library agency in that field. None of those medical libraries I saw are nearly ready to take on this task. Perhaps the library of the Medical Faculty at Airlangga University could be so designated. It is located close to the Institute of Public Health in Surabaya, which may be an advantage.

Many details of organization and operation remain to be considered. Fortunately there are good librarians in these agencies to do the planning. Most important, the libraries designated as national library agencies should be given more money to fulfill this mission. The marginal utility of the funds added to these libraries, however, will be far greater than a similar amount spread throughout all research institutes in Indonesia.

Even if the libraries specified here are not selected as national library agencies, or if additional libraries are found to share the load, the concept of developing sound, large national collections is important. Indonesia cannot build all research institute libraries in all areas of science and technology to a state of complete, up-to-date self-sufficiency. This would be impossible even with massive doses of foreign aid. If the nation can proceed in the fashion herein recommended, then it can selectively pick research institute libraries from time to time for special development, according to national priorities. These libraries can then join the national library agencies in sharing the load of national service.

Again I must point out that the attainment of improvements in university libraries as recommended by Dr. Williamson, will benefit special libraries. The libraries of many research institutes are used by university students, some quite heavily. Carefully-selected, well-organized and well-managed university libraries would relieve the research institutes of some of this burden. In addition, collections in many subjects developed in depth in university libraries can form the backstop for exhaustive literature studies and retrospective collection services that will sustain small specialized research libraries in Government and industry.

As an aid to the development of pertinent library and information services that are relevant to the work of Indonesian scientists and engineers, and as a means of more fully utilizing information derived from Indonesian research, PDIN should become a national clearinghouse on information about Indonesian scientific and technical research and development. PDIN should maintain an inventory of current research projects underway in Indonesia, with abstracts of the work to be done in each project. Directors of research institutes should provide the information for the inventory at the request of PDIN. All research agencies should be required to send copies of the reports of research and development projects to PDIN, and PDIN should regularly publish an annotated list of these reports for distribution to all Government officials and research directors in science and technology, and to important information centers throughout the world. The fact that photocopies of these reports may be obtained for a fee from PDIN should be widely advertised.

INFORMATION SERVICES MUST BE DEVELOPED ALONG WITH IMPROVED LIBRARIES

With the exception of PDIN, most of the library agencies in science in Indonesia offer no special information services to their clientele. They are merely passive agents, with books and journals waiting on their shelves for those who think to use the information in them. Many of the libraries, including some of the large ones, are not arranged in any orderly fashion so that users can find their way to appropriate titles. Catalogs and indexes in the libraries are not very sophisticated as retrieval devices.

The resources in Indonesian science libraries are underutilized. Titles are sought by the users of some libraries that exist, unbeknownst to them, in nearby libraries. There are, for example, many reports within the various series issued by the United States Atomic Energy Commission that contain information useful in fields other than nuclear science, such as medicine, agriculture and materials testing. Thousands of these documents are available in Indonesia, some at Bandung (at the National Atomic Energy Agency) and some at Jogjakarta (at GAMA National Atomic Agency). There is no one at either location with the training or the experience in information services to recognize the potential of these reports and to organize means of diffusing the knowledge in them throughout the nation.

Indonesian science and engineering cannot tolerate less than full utilization of scarce library resources. Further, Indonesian scientists and engineers need information specialists to look out for their interests by seeking literature and information that is not yet included in Indonesian libraries. Every science library in Indonesia should be service oriented. This is a way of operating that is normal to a professionally educated special librarian, and there should be such a person in charge of each library. The larger library agencies should appoint people to their staffs whose job is solely to offer special services.

Among the important services that should be offered, either by each library, or by a national service (such as PDIN) are: the referral of literature, compilation of bibliographies (either regularly in selected subjects, or on demand in specific subjects), abstracting and indexing, and translating.

NATIONAL PLANS FOR LIBRARY DEVELOPMENT IN SCIENCE, AGRICULTURE, AND MEDICINE ARE ESSENTIAL

Indonesia faces the task of building its science libraries and information services at a most inpropitious time. The cost of science books and commercial information services throughout the world is rapidly being inflated. Many U.S. Government sources of information services are now charging fees for publications that once were offered free, or are allowing commercial publishers to produce new information services based on government-sponsored data bases, for which the publishers charge a relatively high fee. Thus, Indonesian libraries must buy a considerable amount of library material at just the time when the Indonesian economy can least stand the strain of inflation.

It thus becomes imperative for Indonesia to reduce the need for large quantities of new material by, among other things, careful planning of library services and increased interlibrary cooperation. It is imperative, also, to increase the quality of the selection of materials to be added to Indonesian science and engineering libraries so that irrelevant and duplicative information is not acquired. The Indonesian library community must constantly seek better ways of providing access to information, and to its management once acquired.

Every Indonesian library cannot be completely self-sufficient. But each should do its best to be up to date and comprehensive in the subject field of its agency's mission. Publications and information from peripheral fields must be obrained either from the libraries in which those subjects are of principal concern, or from a national library agency. Each library must take the responsibility to assist other libraries in the subject area of its primary concern.

Indonesia needs a national library development plan in science and technology. Responsibilities for maintaining collections in various subjects must be assigned to various libraries. Large national collections should be maintained in the major disciplines, e.g., the physical and engineering sciences, the natural or biological sciences, including agriculture, and the medical sciences. The national libraries should coordinate the operation of the national plan, and should assume responsibility for maintaining retrospective collections in all fields, and current collections in important subjects that are not otherwise covered by designated libraries.

The success of such a plan relies on interlibrary lending of materials, and on photocopying in lieu of loan of those materials that cannot be loaned. A national union catalog of holdings is an essential element for the location of material. The plan should not be delayed in construction and implementation, however, if a union catalog cannot be initiated. A strategy of searching for specific titles can be built around the knowledge of the subjects covered by various libraries. Titles that are not located where they would most likely be by subject can be sought at the national library agency, or acquired by the appropriate library on demand.

Libraries in Indonesia are understandably reluctant to loan materials to people outside their own agencies. They should, however, develop a national interlibrary loan code, of which there are many models, and open up access to their collections to other libraries, rather than to individuals.

I recommend that LIPI, the Ministry of Agriculture, and one or more Government agencies in the health sciences field, including that part of the Government concerned with medical education in Indonesia, appoint a committee of librarians and interested scientists to draw up a national plan for library service in science, engineering, agriculture and medicine.

Wherever possible existing library collections should be consolidated. Library resources, and finances to improve them, are too limited in Indonesia to justify the development of library collections and services by each agency. The determination with which every research agency seems to seek to provide full library services and facilities for itself can only prolong the period of depression of science libraries in Indonesia.

If consolidations occur, each agency that is served must share in the cost of the operations. If one library takes on the load of service for another, it must be compensated for this work. Services are offered by people, and the greater the service load, the greater the need for staff. Also, the competition for library materials might become keen among similar projects using the same library, and books and journals will either wear out faster or will be needed in duplicate. (The amount of duplication should be less, however, than if two libraries were maintained in related subject areas.) New projects and customer agencies have a way of generating new ideas that require library materials in subject areas not normally covered by the host library. For all of these needs, additional funds should be provided lest the normal services of the host center be diluted below an acceptable level of performance.

Compensation for services offered may be made through transfers of funds among agencies, through the levying of fees for services rendered, through normal Government budget processes, or through a combination of these means.

LIBRARIES AND AGENCIES VISITED

DJAKARTA

Indonesian National Scientific Documentation Center
Jajasan Idayu (Genung Agung)
University of Indonesia
    Library School
    Faculty of Medicine
National Institute of Economic and Social Research
National Language Institute
Indonesian Petroleum Institute
National Atomic Energy Agency, Research Center
Dr. Tjipto Mangunkusomo Hospital
British Council
National Institute for Cultural Studies
Library of Political Science and History
National Bibliographical Agency
Central Museum Library
Horticultural Research Institute
Power Research Institute
Industrial Research Institute
Institute of Marine Research
Ministry of Public Works
Building Information Center
BAPPENAS Library

BOGOR

Bibliotheca Bogoriensis
National Biological Institute
Chemical Research Institute
Institute for Estate Crops
Bogor Agricultural University
Institute for Forest Research
Nutrition Research Institute
Central Agricultural Research Institute
Industrial Crops Research Institute

BANDUNG

Biopharmacy
National Atomic Energy Agency
Cellulose Research Institute
Regional Housing Center
Textile Technology Institute
Ceramic Research Institute
Geological Survey of Indonesia
National Institute of Geology and Mining
    (Including LIPI Institutes Libraries)
Materials Testing Institute
Institute of Technology

JOGJAKARTA

Gadjah Mada University
Central Library
GAMA National Atomic Agency
Faculty of Mathematics and Physics
Faculty of Geography
Batik Research Institute
Research Institute for Leather Technology

SOLO

Solo Rehabilitation Center

GRESIK

Semen Gresik

SURABAYA

National Institute of Public Health

DEN PASAR

Udayana University, Central Library

MEDAN

Institute for Estate Crops
University of North Sumatra
Faculty of Medicine
Faculty of Economy
Public Library
Nommensen University